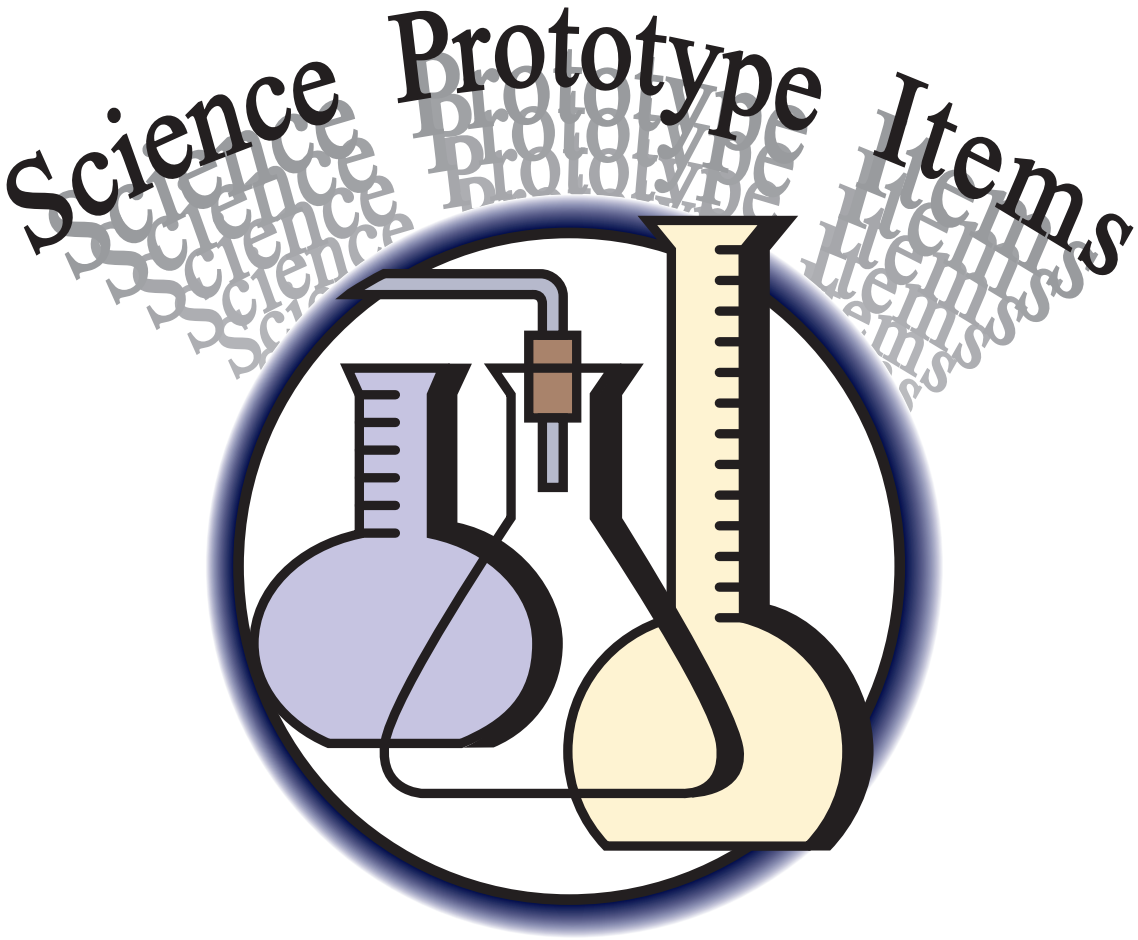
meap

Michigan Educational Assessment Program



2001 - 2002 Assessment

Elementary School

Directions: Read the following paragraph and then answer questions 1 - 5.

Shannon's family has an electric popcorn popper. It heats air and blows the hot air on the popcorn kernels to make them pop.

1 What form of energy makes the popcorn popper operate?

A sound energy, because the popcorn makes a popping sound, and you hear the motor

B electrical energy, because electricity is used to heat the air and run the fan motor

C food energy, because the popcorn is food

D motion energy, because the popcorn moves when it pops

2 Shannon melted some butter in a pan on the stove to put on her popcorn. What form of energy made the butter melt?

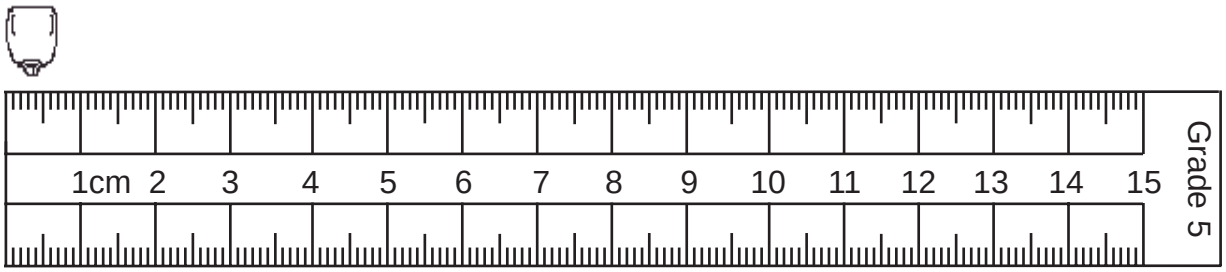
A light energy

B heat energy

C food energy

D sound energy

3 What is the width of the popcorn kernel shown in the picture?



A 5 mm **B** 10 cm **C** 5 cm **D** 7 mm

Directions: Read the following paragraph and use the following chart to answer questions 4 - 5.

Shannon decided to compare different kinds of popcorn to find out which was the best buy. She bought three kinds of popcorn: regular white popcorn, regular yellow popcorn, and gourmet yellow popcorn. She put 50 kernels of each kind in the popper. She kept the popper running for each batch until the popcorn stopped popping. Then she counted the number of kernels of each kind that popped. Next, she put 25 popped kernels of each kind into a measuring cup to find out which kernels popped the biggest. Then she tasted some of each kind of popcorn. Her results are shown in the chart below.

Kind of popcorn	Number of kernels that popped	Volume of 25 popped kernels	Price for a 16-ounce bag	Shannon's taste test
regular white	38	60ml	$1.19	OK
regular yellow	46	60ml	$1.19	BEST
gourmet yellow	45	80ml	$1.50	OK

4 Shannon's brother looked at her results and decided that the gourmet popcorn was the **BEST**. What evidence from the chart supports his decision?

A There is no evidence from the chart to support his decision.

B More of the gourmet popcorn popped.

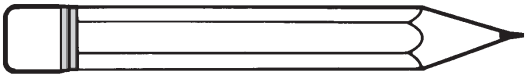
C There is more popcorn in the bag of gourmet popcorn.

D The gourmet popcorn kernels popped the biggest.

5 Shannon decided that the regular yellow popcorn was the **BEST** popcorn. Identify two pieces of evidence from the chart that support her decision.

ANSWER THIS ITEM IN YOUR ANSWER BOOKLET.
NOTHING WRITTEN IN THE SPACE BELOW WILL BE SCORED.

6 Louise investigated the parts of a pencil. She tested each part with a circuit to see if the materials were conductors or nonconductors of electricity. If a material is a conductor, the bulb will light. Her results are shown below. Which of the parts are made of a material that conducts electricity?



Part of Pencil	Bulb Lights
Eraser holder	Yes
Eraser	No
Wood part	No
Graphite point	Yes

A only the eraser holder

B the eraser holder and the graphite point

C all of the parts

D none of the parts

7 Joe put a cherry flavored cough drop in 150 ml of hot water and the same kind of cough drop in 150 ml of cold water. He observed that the cough drop in hot water dissolved faster. What question could Joe answer from this observation?

A What kind of cough drop would be best for coughs?

B How does the size of the cough drop affect how fast it will dissolve?

C What effect does the water temperature have on dissolving cough drops?

D What effect does the amount of water have on dissolving cough drops?

Middle School

Read the following paragraph and then answer questions 1 - 5.

Jamie was eating a sandwich for lunch and thinking about how her body uses food. She decided to do some research about what food is and what happens to it after she eats it.

1 Why was it important for Jamie to chew her sandwich before swallowing it?

A Chewing helps the food stick together more efficiently.

B Only bite-size pieces can pass through the stomach wall into the bloodstream.

C Saliva and digestive juices can operate more efficiently on smaller pieces of food.

D Chewing allows some of the food to be absorbed into the bloodstream.

2 Jamie's sandwich had lettuce on it. What two words correctly describe Jamie and the lettuce?

A consumer and producer

B producer and decomposer

C decomposer and producer

D consumer and decomposer

3 Which of the following represents the correct pathway of the nutrients in the food that Jamie has eaten?

A circulatory system—> cells—> digestive system

B circulatory system—> digestive system—> cells

C digestive system—> circulatory system—> cells

D cells—> digestive system—> circulatory system

4 Jamie decided to start running around the block twice each day. Her diet did not change, but she did notice a change in her weight at the end of a five-week period. The following table contains the information Jamie collected from her exercise experiment.

Jamie's Weight Loss

Week	Weight (lb)
1	120
2	119
3	118
4	117
5	117

Jamie concluded that running helped her lose weight. Do the results in the table support her conclusion?

A Yes, because the data does show that Jamie lost weight.

B Yes, because eating healthy foods helped Jamie lose weight.

C Yes, because eating sandwiches affected Jamie's ability to exercise.

D Yes, because the more times Jamie ran around the block each day, the more weight she lost.

5 The muscles in Jamie's legs use nutrients from the sandwich she ate. Describe one physical change and one chemical change food must go through before Jamie's body can use these nutrients.

ANSWER THIS ITEM IN YOUR ANSWER BOOKLET.
NOTHING WRITTEN IN THE SPACE BELOW WILL BE SCORED.

6 Julio mixed some orange powder with water to make an orange-flavored drink. As he stirred the drink, he noticed that the powder slowly disappeared. Which **BEST** explains what happened to the molecules making up the powder?

The **molecules** making up the powder

A were dissolved by the liquid water.

B were melted by the liquid water.

C broke out of their arrangement and mixed in among the water molecules.

D broke out of their arrangement and floated around in the liquid water.

Refer to the table of high and low temperatures and precipitation for a location in Michigan to answer question 7.

Date	High temp.	Low temp.	Precipitation
10-1	70	52	0.00
10-2	68	49	0.00
10-3	73	61	0.00
10-4	56	47	0.62
10-5	48	35	0.00
10-6	53	36	0.00
10-7	65	49	0.05

7 What event probably caused the rainfall on 10-4?

A It is an example of lake effect rain.

B Longer nights cool the air, causing rain to condense.

C A cold front triggered rainfall.

D Rain from the south reached Michigan.

Constructed Response Rubrics

Grade 5

"Yellow Popcorn the Best"

Scoring Guide:

2 = Two acceptable reasons
1 = One acceptable reason
0 = No acceptable reasons

Among the acceptable reasons:

Yellow popcorn had the largest # of kernels (46 out of 50) popped.
Yellow popcorn had the best taste.
Yellow popcorn is one of the cheaper kinds/is cheap.

Grade 8

"Muscles in Jamie's Legs"

Scoring Guide:

2 = One physical change **and** one chemical change
1 = One physical change **or** one chemical change
0 = An incorrect response

Among the acceptable physical changes are:

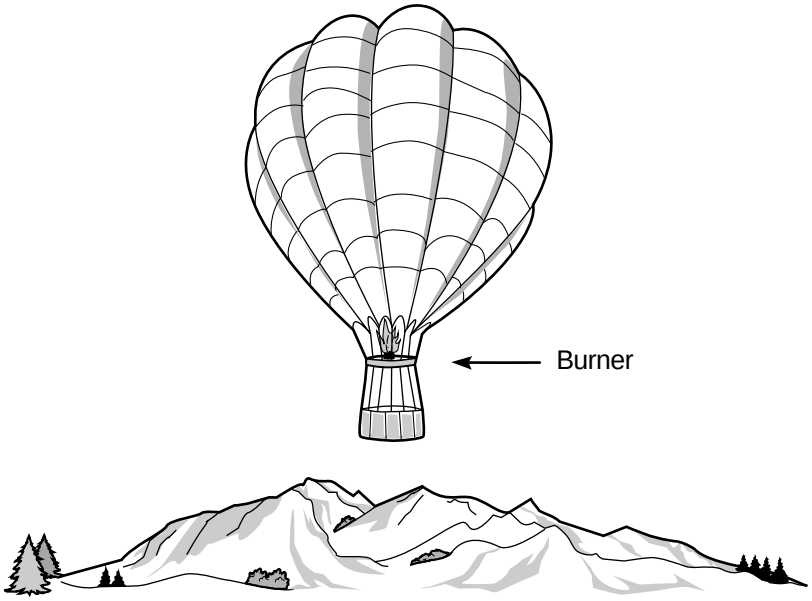
Jamie's teeth break the food into smaller pieces
Nutrients are absorbed/dissolved into Jamie's blood stream
The food was sliced, cut up, cooked, etc.

Among the acceptable chemical changes are:

The acid (juice) in Jamie's stomach break the food down
Jamie's saliva starts to break down the food
Enzymes help to break down the food
The food was cooked first

High School

The diagram shows a hot air balloon floating in the air. You can see the burner heating the air inside the balloon. Study the diagram. Then answer questions 1 through 4.



1 If the hot air balloon is floating—neither ascending nor descending—the mass of air displaced by the balloon must be

A less than the mass of the balloon.

B greater than the mass of the balloon.

C the same as the mass of the balloon.

D equal to an equivalent volume of water.

2 An inventor designed a device for hot air balloons that monitors the atmosphere as the balloon rises. As the air gets thinner and colder, the device signals the burner to produce more heat. This is an example of

A recycling.

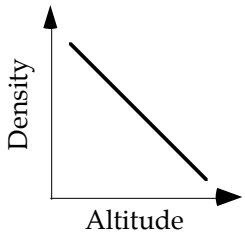
B conservation.

C feedback control.

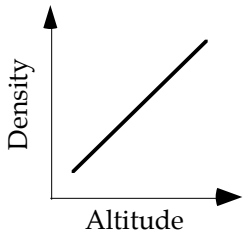
D mathematical constancy.

3 As altitude increases, the density of the air around the balloon decreases. Which graph below shows this relationship?

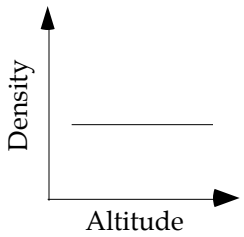
A



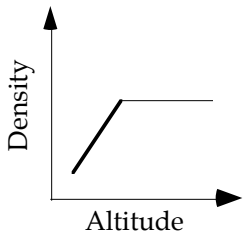
B



C



D



(2 points)

4 How does the temperature of the air inside the balloon affect the load that can be lifted by the balloon? In your response, be sure to include the concept of density.

ANSWER THIS ITEM IN YOUR ANSWER DOCUMENT.
NOTHING WRITTEN IN THE SPACE BELOW WILL BE SCORED.

High School Test
Constructed Response Rubric

Key Elements:

A: Density/Volume

- The heated air in the balloon is less dense than the surrounding air.
- Volume of air in the balloon increases as the air is heated.
- The mass of the air displaced by the balloon must be greater or equal to the mass of the ballooon in order for the balloon to be lifted or float.
- The mass of air inside the balloon decreases as cooler air is displaced out of the balloon.

B: Temperautre/Bouyancey/Other

- The warmer the air inside the balloon, the greater the load that can be lifted.
- An increase in temperature of air inside the balloon will cause the balloon to rise.
- Balloon rises if gravitational force is less than the bouyant force.

Score Points:

2 Points = Both **A** and **B** are given correctly.
1 point = Either **A** or **B** are given correctly.
0 points = Other